System for Reactive Automated Control Over Nano-Scale Photocoagulation Process Utilizing Active Area Monitoring

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Introduction

Photofabrication processes based upon this author's proposed concept of utilizing photocoagulation within a liquid in a three-dimensional space in lieu of photo-etching of solid semiconductor wafer layers require the ability to determine when the correct combination of molecules drift within the target area for photocoagulation so that a coagulation-inducing pulse may be fired at the precise time that the correct materials drift into the target area in order to both ensure the presence of a sufficient number of the needed molecules as well as to ensure the absence of any contaminating molecules. The follow process assumes that a liquid solution consisting of all of the disparate materials needed for the construction of a computer processors will be intermixed. As, in this scheme, the conductive wires will double as scaffolds for the transistors, it is not practical to use solutions consisting of only a single compound at a time.

Abstract

As we are already proposing to use intersecting helical beams in order to generate point light sources emanating from within the medium, it makes sense to use the generation of point light sources in the medium in order to assess which types of molecules are present in a particular area in order to support our objective of bringing about the photocoagulation of desired compounds in the desired locations, particularly when chance governs whether the correct combination of atoms will be present in a desired area at any given time. We may use bursts of light shorter in duration than the sort which is useful for triggering a coagulation event in order to obtain the needed information.

The light generated by the intersection of two helical beams would necessarily be a mixture of white light, UV light and infrared light. Most useful for this probing would be the infrared light as it may pass through the overall mechanism in order to arrive at a series of sensors which could measure subtle changes to the quality of the light returned. As the material present in a three-dimensional nano-scale area would need to be assessed, the emissions of IR must be measured from all directions. As germanium (used for the transistors) and copper (used for the connecting wires,) for example, would generate different spectral lines and as the emitted IR could be measured from a variety of perspectives around the circumference of the fabrication area and a variety of observations from a variety of different perspectives could be used to deduce the exact number of atoms or molecules in the target area and their relative position as well as their speed and direction of motion within the fluid, careful analysis of the escaping IR light can be used in order to determine not only the contents of a particular spatial area within the medium, but how long the system has to initiate a coagulating burst before

the needed particles drift out of range. The atoms nearest to the light bursts would have the greatest light-absorptive effects and would cast a sort of shadow in particular directions which betray their position within the area being assessed. Repeated observations in rapid succession can inform us as to the direction of motion and speed of the atoms.

In this regime, the natural circulation and entropy of the various particle types in the solution act as a great many hands which can, per chance, place the needed materials into the needed places if one merely waits for them to enter the desired areas. One then only needs to use a sustained burst from the coagulating point light source in order to pull together the atoms into a solid which is positionally fixed, locking chance configuration of atoms into permanent place.

Conclusion

This proposal high-resolution IR imaging, requires a great many antipodean-configuration counter-rotating helical beam pairs, requires some time and a great many observations (most likely about 200 observations for each 1nm area of a cube of five square centimeters,) but given the ability to make a sufficient number of observations and to fabricate transistors concurrently in a large enough number of zones, this process can be nearly as speedy as more traditional methods. The greatest engineering challenge will likely be the directional control of the beams and the ability to array and sufficiently miniaturize a sufficient number of helical-capable beam mechanisms each of which can be individually aimed at disparate points in a three-dimensional space. Each beam would necessarily have a companion beam in antipodean position on the opposite side of the fabrication medium.

Steps such as photoreact bakes would become obsolete and thus, this process would likely not be significantly more time-consuming than established processes in overall terms.